

PATENT APPLICATION TRANSMITTAL LETTER
(Small Entity)

Docket No.
58959.0024

TO THE ASSISTANT COMMISSIONER FOR PATENTS

Transmitted herewith for filing under 35 U.S.C. 111 and 37 C.F.R. 1.53 is the patent application of:

DAVID A. MONROE

For: **METHOD AND APPARATUS FOR SENDING AND RECEIVING FACSIMILE TRANSMISSIONS OVER A
NON-TELEPHONIC TRANSMISSION SYSTEM**

Enclosed are:

- ☒ Certificate of Mailing with Express Mail Mailing Label No. **EL283360129US**
☒ **TEN (10)** sheets of drawings.
☐ A certified copy of a _____ application.
☐ Declaration ☐ Signed. ☐ Unsigned.
☐ Power of Attorney
☐ Information Disclosure Statement
☐ Preliminary Amendment
☐ _____ Verified Statement(s) to Establish Small Entity Status Under 37 C.F.R. 1.9 and 1.27.
☐ Other:

CLAIMS AS FILED

For	#Filed	#Allowed	#Extra	Rate	Fee
Total Claims	19	- 20 =	0	x \$9.00	\$0.00
Indep. Claims	4	- 3 =	1	x \$39.00	\$39.00
Multiple Dependent Claims (check if applicable) <input type="checkbox"/>					\$0.00
BASIC FEE					\$380.00
TOTAL FILING FEE					\$419.00

- ☒ A check in the amount of **\$419.00** to cover the filing fee is enclosed.
☒ The Commissioner is hereby authorized to charge and credit Deposit Account No. **50.0259**
as described below. A duplicate copy of this sheet is enclosed.
☐ Charge the amount of _____ as filing fee.
☒ Credit any overpayment.
☒ Charge any additional filing fees required under 37 C.F.R. 1.16 and 1.17.
☐ Charge the issue fee set in 37 C.F.R. 1.18 at the mailing of the Notice of Allowance,
pursuant to 37 C.F.R. 1.311(b).

Dated: *August 10, 1999*

[Signature]
Signature

CC:

DIPE/JCWS

AUG 18 1999

RECEIVED

P01SMALL/REV08

**METHOD AND APPARATUS FOR SENDING AND RECEIVING
FACSIMILE TRANSMISSIONS OVER A NON-TELEPHONIC
TRANSMISSION SYSTEM**

Inventor: David A. Monroe

5 This is a continuation in part application of Serial No. 08/815,026 filed March 14, 1997 and
allowed on March 1, 1999.

BACKGROUND OF THE INVENTION

Field of the Invention

10 The subject invention is generally related to facsimile transmission of documents, commonly
known as fax systems, and is specifically directed to a fax system for sending documents and printed
materials via distributive communication networks such as, by way of example, the Internet.

Discussion of the Prior Art

15 Facsimile transmission of documents and printed matter is well known. In a typical
application, the document is fed through a transmission machine, where the printed or graphic
material on the hard document is converted into a digital signal. This signal is then transmitted in
real time over a telephone line to a compatible receiving machine where it is decoded and a facsimile
document is reproduced.

20 Over the years, numerous changes have been made in this basic concept to improve both the
quality and the efficiency of the transmission. Most receiving units still record and encode the
information on a line-by-line feed. Others store the entire document code prior to initiating
transmission and store the entire received document prior to reproduction. Still other systems utilize
memory capacity to permit storage of the documents during normal business hours for transmission
during off hours. Large volume users have incorporated comprehensive data compression and
reduction schemes in order to reduce the amount of data required to be transmitted.

25 All of these various improvements have been made to reduce the amount of on-line time per
transmission. Since transmission is almost always via public telephone lines, both congestion and
expense are issues. This is particularly true when transmitting documents over domestic long
distance lines or international telephone systems. Enormous savings could be achieved by a
facsimile transmission system which is not dependent upon long distance and international public
30 telephone lines.

SUMMARY OF THE INVENTION

The subject invention is directed to a facsimile transmission system which does not require the use of long distance or international telephone systems in order to transmit documents over long distances. Instead the "fax" system of the present invention utilizes the Internet, permitting fax transmission via local telephone service and Internet communication, or, in the alternative, directly over a network system without use of public access communication lines such as telephonic systems.

In the preferred embodiment, the fax system is also fully compatible with prior art systems and can send and receive documents via telephone lines as well as via other distributive communication networks such as, by way of example, the Internet. One significant advantage of the system of the subject invention is the ability to incorporate printed documents and graphic material, as well as computer generated documents and graphic material, into the fax system.

While the most significant advantage of the network fax system of the subject invention is the elimination of the use of costly public telephone carriers, the overall versatility of the system provides additional advantages over the prior art. For example, documents faxed into the system via prior art telephonic systems can be readily re-transmitted over the Internet. Likewise, documents transmitted over the Internet in the well known manner, e.g., E-mail, can be converted and retransmitted via prior art telephonic fax systems.

In addition, the network fax system of the subject invention can serve as an economical scanner, converting hard documents and graphic material into machine readable digital code which can then be transmitted directly into a computer based system for reformatting in a word processing system and the like. Likewise, the information in the computer system can be decoded and printed at the fax machine.

The versatility provided by the method and apparatus of the subject invention permits a common fax machine to become a printer and a scanner, as well as an interface to the distributive networks. This permits stations not on the network to communicate with the network via facsimile document transmission and permits the network users to communicate with the remote station.

All of this can be accomplished utilizing standard local telephone hookup between a user station and the network, permitting worldwide communication via a network such as the Internet without the use of long distance and international telephonic carriers.

The heart of the system of the subject invention is an interface positioned intermediately of a standard telephone line, a fax machine, and a computer. The interface is software supported at the computer and is adapted to route the signals therethrough to the computer for storage or for transmission via a selected network, or over a standard telephonic line, both to and from a standard fax machine.

In the preferred embodiment, the interface is inserted between the fax machine, the P.C., and the standard telephone line. The system is also adapted for use with other communication links and devices such as by way of example, ethernet, the world wide web and the like. The interface is also connected directly to a computer base such as a typical personal computer system, which permits communications between the network, the fax machine and the standard telephone system.

All of the software support for the system is loaded into the standard computer base. The interface permits the fax signal on the line between the public telephone system and the fax machine to be diverted to the computer where it is converted by the software into an acceptable Internet format. Signals from the Internet are converted into an acceptable fax format whereby they can be received by the local fax machine or transmitted over the standard telephone line to a remote fax system.

It is, therefore, an object and feature of the subject invention to provide a facsimile transmission system for permitting long distance fax transmission without the use of long distance or international telephone service.

It is a further object and feature of the subject invention to provide a facsimile transmission system that permits "faxed" documents to be transmitted and received via distributive data communication networks.

It is an additional object and feature of the subject invention to provide a facsimile transmission system which permits conversion of documents from any source into a computer into a standard facsimile format for transmission and reception via a standard facsimile transmission system.

Other objects and features of the invention will be readily apparent from the accompanying drawings and detailed description of the preferred embodiment.

Brief Description of the Drawings

Fig. 1 is a flow diagram of a system incorporating the features of the subject invention.

Fig. 2 is a diagrammatic view of the activation combinations of the interface of the subject invention.

Fig. 3 is a more detailed flow diagram of the interface in accordance with the subject invention.

Fig. 4 is an alternative embodiment, similar to Fig. 3.

Detailed Description of the Preferred Embodiment

As shown in Fig. 1, the subject invention is utilized in combination with a standard computer based system such as, by way of example, the personal computer 10. As is typical, the computer 10 is connected to a modem 12, which may be either internal or external as shown. In a typical application, the modem may be used to connect the computer system to a distributive network such

an activation signal for initiating the facsimile machine when a standard incoming telephone "ring" signal is not present. The ring generator 44 communicates directly with the computer via cable 20 directly with the local facsimile machine 26 via the interface 26. A parallel switch 48 is also present to selectively initiate the ring generator. Where desired, cable 20 can also be connected directly to the modem and through a controller 50 to a switch 52 and to the ring generator 44 to signal an incoming fax directly from the network.

As more specifically shown in Fig. 4, the system of the present invention is adapted for converting any of a variety of computer generated data signals to a facsimile format, and vice versa. For example, a data signal received by the computer 10 from a network source 14 is output on cable 20 and introduced directly to a local facsimile machine 26 via interface 18. The ring generator 44 will activate the facsimile machine by providing a simulated "ring" signal. Conversely, the local facsimile machine 26 may be used to receive hard copy data and via the interface 18 and dedicated cable 20, introduce the data into the computer 10 for transmission over a network line 14.

The telephone hook-up 22 shown in Fig. 3 is used when a remote facsimile machine is communicating either directly with the facsimile machine 26 in the normal manner, or with the computer 10 for transmission over the selected distributive network.

The facsimile system of the subject invention is very versatile in that it permits the local fax machine 26 to selectively transmit inputted and scanned documents to remote fax systems via telephone line 22, to the computer for processing via cable 20 and to remote fax locations via the Internet 14. The local facsimile machine becomes an inexpensive scanner source for scanning documents directly into the computer. The system of the subject invention also permits documents received via the Internet (whether originating as facsimile transmissions, E-mail or other) or documents generated at the computer or direct facsimile transmissions via telephone line 22 to be printed directly at the local facsimile machine 26, potentially eliminating the need for a separate printer 16.

The facsimile interface and transmission system of the subject invention is an efficient method and apparatus for transmitting and receiving documents via the distributive communication networks such as the Internet as well as via direct computer communication and standard fax transmission, without requiring the use of additional peripheral hardware components. While certain features and embodiments of the invention have been described in detail herein, it will be readily understood that the invention encompasses all modifications and enhancements with the scope and spirit of the following claims.

CLAIMS

What is claimed is:

1. A facsimile transmitting/receiving system comprising a standard facsimile machine and a computer based system in communication with the standard facsimile machine, the system comprising:

- a. an interface positioned intermediately of and in communication with both the
5 facsimile machine and the computer;
- b. a line for receiving and sending facsimile signals in communication with the interface for selectively communicating directly with the facsimile machine and the computer; and
- c. means for converting encoded documents to formats compatible with computer supported systems and with the facsimile machine.

2. The facsimile system of claim 1, wherein said means is further adapted for converting facsimile signals to a format for transmission over distributive communication networks and for converting network transmitted signals in a format for transmission over a facsimile transmission line.

3. The facsimile system of claim 2, wherein said interface further includes means for sending and receiving facsimile signals over a standard telephone line.

4. The facsimile system of claim 2, wherein said interface further includes means for sending and receiving facsimile signals between the computer and the facsimile machine.

5. The facsimile system of claim 3, wherein said interface further includes means for sending and receiving facsimile signals between the facsimile machine and the telephone line.

6. The facsimile system of claim 3, wherein said interface further includes means for sending and receiving facsimile signals between the computer and the telephone line.

7. The facsimile system of claim 1, the interface further comprising a signal generator for producing a signal whenever a facsimile signal is transmitted to the facsimile machine.

8. The facsimile system of claim 7, wherein said signal generator produces a simulated ring activation signal to simulate a telephone ring whenever a facsimile signal is to be transmitted to the facsimile machine.

9. A method for transmitting a facsimile signal from a local station to a remote station via a distributive communication network comprising the steps of:

- a. generating a facsimile signal utilizing a standard facsimile machine at the local station;
- 5 b. converting the signal to a format compatible with the network; and
- c. transmitting the converted signal via the network to a remote station.

10. The method of claim 9, wherein both the local station and the remote station are facsimile machines, and further comprising the steps of:

- a. receiving the converted, transmitted signal at the remote station;
- b. reconverting the transmitted signal to a facsimile format; and
- 5 c. receiving the reconverted, transmitted signal at a standard facsimile machine.

11. A method for transmitting a facsimile signal from a local station to a remote station via a distributive communication network comprising the steps of:

- a. generating a facsimile signal at the local station;
- b. converting the signal to a format compatible with the network; and
- 5 c. transmitting the converted signal via the network to a remote station.

12. The method of claim 11, wherein the generated signal is received at the local station via a telephone line.

13. The method of claim 11, wherein the generated signal is received at the local station via a local facsimile machine.

14. The method of claim 11, wherein the local station includes a telephone transmission line, a local facsimile machine and a network interface and wherein the facsimile signal at the local station can be transmitted/received selectively by any of the telephone transmission line, the local facsimile machine and the network interface.

15. The method of claim 14, wherein the network interface is a personal computer.

16. The method of claim 15, wherein the facsimile signal at the local station may be transmitted directly to the computer for manipulation by additional software support programs.

17. An interface for use in combination with a facsimile receiving/sending station and an Internet interface, comprising means for converting a signal to be transmitted/received by the facsimile station to/from a format compatible with the network.

18. The network of claim 17, further comprising a telephone line in communication with the interface, and means for selective directing a facsimile signal between the telephone line, the network interface and the facsimile receiving/sending station.

19. The network of claim 18, wherein said network interface comprises a personal computer.

600
601
602
603
604
605
606
607
608
609
610
611
612
613
614
615
616
617
618
619
620
621
622
623
624
625
626
627
628
629
630
631
632
633
634
635
636
637
638
639
640
641
642
643
644
645
646
647
648
649
650
651
652
653
654
655
656
657
658
659
660
661
662
663
664
665
666
667
668
669
670
671
672
673
674
675
676
677
678
679
680
681
682
683
684
685
686
687
688
689
690
691
692
693
694
695
696
697
698
699
700
701
702
703
704
705
706
707
708
709
710
711
712
713
714
715
716
717
718
719
720
721
722
723
724
725
726
727
728
729
730
731
732
733
734
735
736
737
738
739
740
741
742
743
744
745
746
747
748
749
750
751
752
753
754
755
756
757
758
759
760
761
762
763
764
765
766
767
768
769
770
771
772
773
774
775
776
777
778
779
780
781
782
783
784
785
786
787
788
789
790
791
792
793
794
795
796
797
798
799
800
801
802
803
804
805
806
807
808
809
810
811
812
813
814
815
816
817
818
819
820
821
822
823
824
825
826
827
828
829
830
831
832
833
834
835
836
837
838
839
840
841
842
843
844
845
846
847
848
849
850
851
852
853
854
855
856
857
858
859
860
861
862
863
864
865
866
867
868
869
870
871
872
873
874
875
876
877
878
879
880
881
882
883
884
885
886
887
888
889
890
891
892
893
894
895
896
897
898
899
900
901
902
903
904
905
906
907
908
909
910
911
912
913
914
915
916
917
918
919
920
921
922
923
924
925
926
927
928
929
930
931
932
933
934
935
936
937
938
939
940
941
942
943
944
945
946
947
948
949
950
951
952
953
954
955
956
957
958
959
960
961
962
963
964
965
966
967
968
969
970
971
972
973
974
975
976
977
978
979
980
981
982
983
984
985
986
987
988
989
990
991
992
993
994
995
996
997
998
999
1000

ABSTRACT

An interface is provided for connecting a standard telephone line and/or a standard facsimile machine with a distributive communication network interface such as a personal computer, whereby facsimile signal present on the telephone line or at the facsimile machine may be transmitted via the Internet to a remote station without the use of long distance or international telephone signal carriers. The facsimile signal may be sent or received via the network using the network, without interfering with the capability to receive and send facsimile signals in the normal manner via a standard telephone line.

0074736 00100

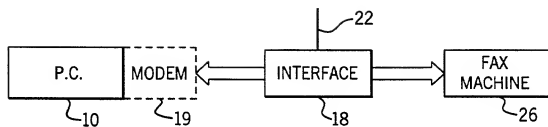


FIG. 1

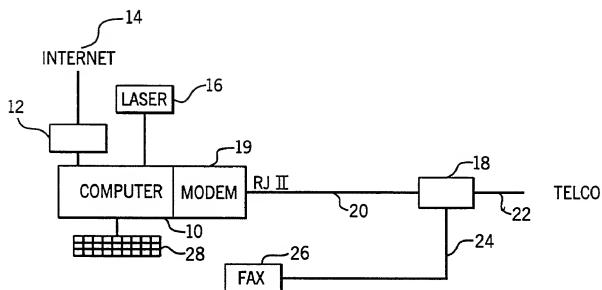


FIG. 2

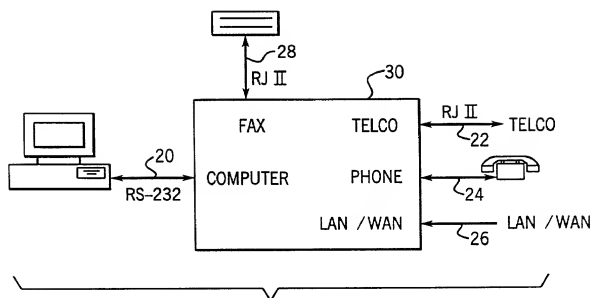


FIG. 3A

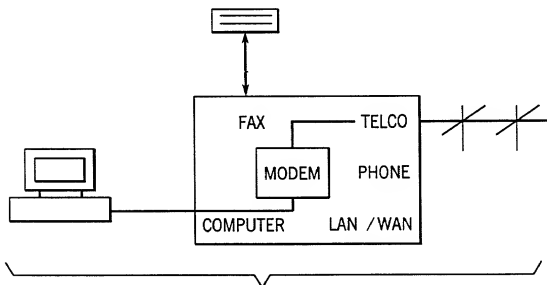


FIG. 3B

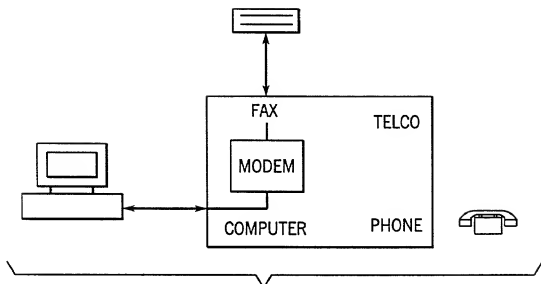


FIG. 3E

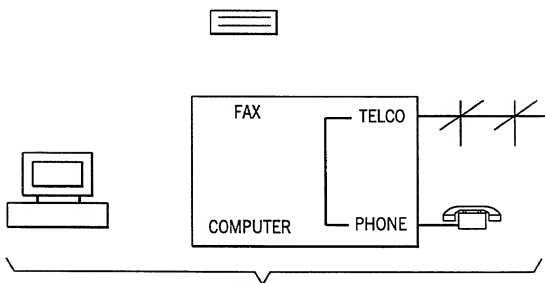


FIG. 3F

FIG. 3G

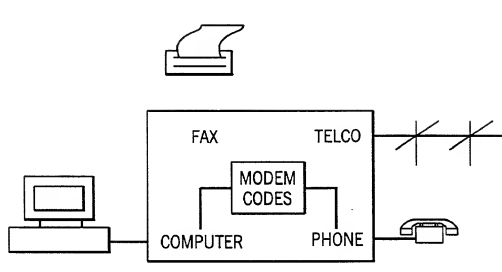


FIG. 3H

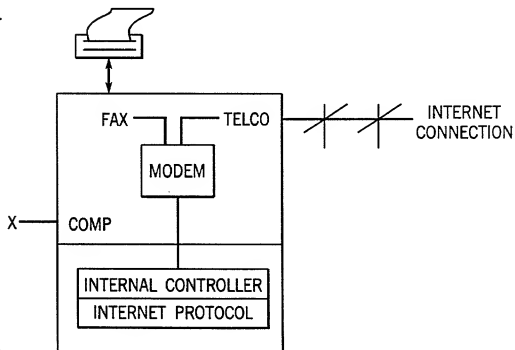


FIG. 3I

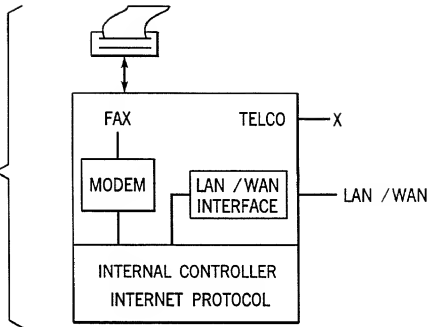


FIG. 3J

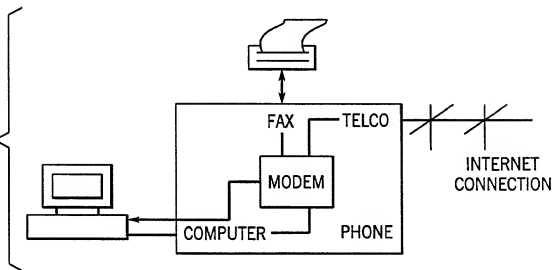


FIG. 3K

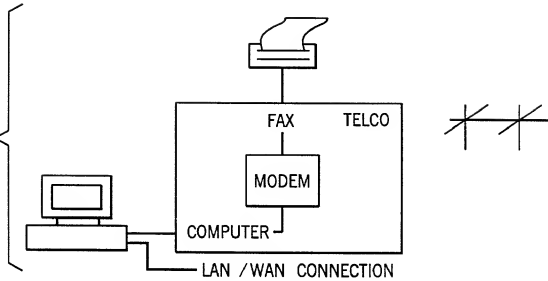
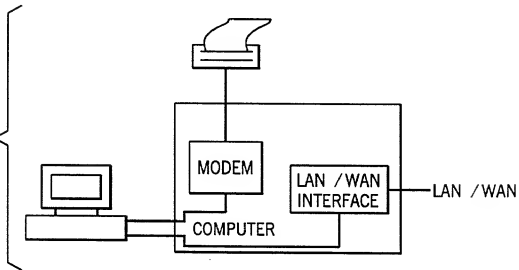


FIG. 3L



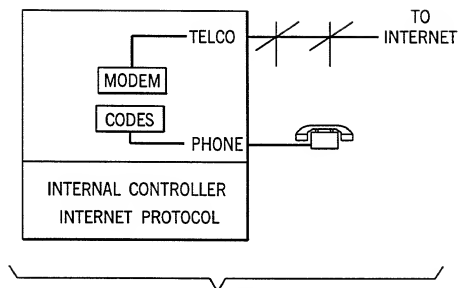


FIG. 3M

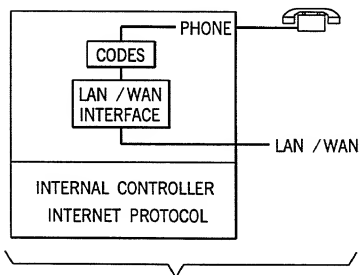


FIG. 3N

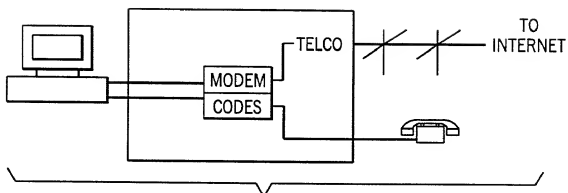


FIG. 3 O

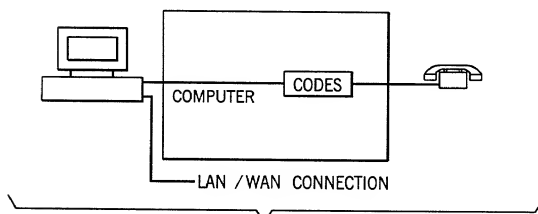


FIG. 3P

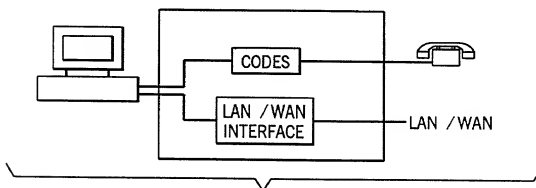


FIG. 3Q

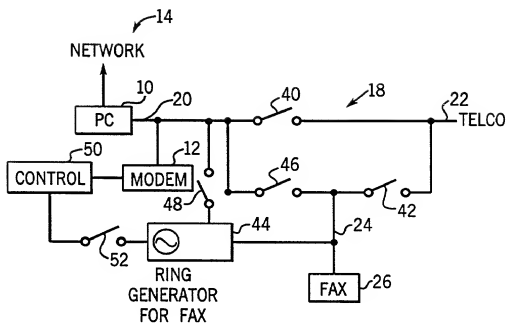


FIG. 4

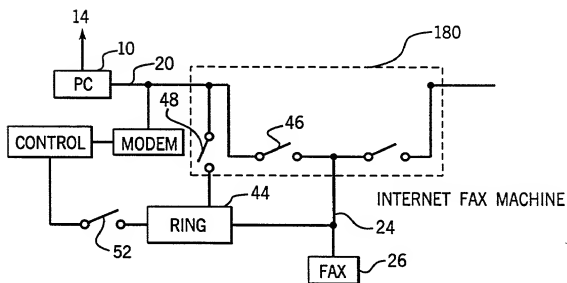


FIG. 5